# APPENDIX G:
# FIXED TELEMETRY SERVICES

Some companies can now use fixed wireless technology to monitor their remote equipment from a central location, such as utility companies monitoring residential meters. Traditionally, company employees had to travel to each device and record measurements manually. However, wireless sensor devices installed in each remote piece of equipment can now transmit measurements back to a company's central office or headquarters, eliminating the need for time-consuming travel. Customers of such companies can even monitor or make changes to the equipment themselves from a remote location using the wireless sensor devices. This new technology is called fixed wireless telemetry.[1] The uses of fixed wireless telemetry include the monitoring of gas, electric, and water utility meters (often referred to as automatic meter reading ("AMR") devices), HVAC systems, gas and oil pipelines, vending machines, alarm systems, parking meters, streetlights, smoke/fire detectors, personal computer printers, factory process systems, photo copiers, and railway and other transportation systems.

Fixed wireless telemetry is similar to mobile data wireless services in that both involve the transmission and measurement of data from equipment in a remote location. The only difference is that with fixed wireless telemetry, the objects that contain the wireless sensors, such as utility meters or vending machines, are stationary.

## A. Current Market Structure

The fixed wireless telemetry market has grown since the publication of the *Third Report*, largely due to continued deregulation in various segments of the utility industry. In the past few years, many states have shifted their utility rate setting policies away from asset-based rate-of-return systems to performance-based systems that calculate rates on factors such as costs, efficiency, and quality of service. The provision of fixed wireless telemetry services has assisted utilities in promoting these factors.[2]

### 1. Non-CMRS Providers

Both non-CMRS and CMRS providers are players in the telemetry market. The two major non-CMRS providers are Itron, Inc. ("Itron") and CellNet Data Systems, Inc. ("CellNet"). Itron is the leader in the AMR telemetry market. As of December 31, 1998, Itron had shipped 13.5 million AMR units, a 22 percent increase from the previous year, to 403 utilities.[3] CellNet's installed

[1] Telemetry is the transmission and measurement of data from a remote source.

[2] Jeanine Oburchay & Brian Park, CELLNET DATA SYSTEMS, INC., Bear, Stearns & Co. Inc., Feb. 5, 1999, at 8 ("*Oburchay & Park*").

[3] *Itron Announces Fourth Quarter and Year-End Results*, News Release, Itron, Inc., Feb. 3, 1999.

telemetry base has doubled since the writing of the *Third Report* from one to two million units.[4] As of February 1999, the company had connected two million telemetry devices[5] and was adding an average of 100,000 devices each month.[6] CellNet has a total of 4.8 million devices under contract[7] and a Memorandum of Understanding for an additional 312,000 devices with utilities that have 7.5 million meters in their service territories.[8] When CellNet's wide area networks under contract are fully built out, the company will cover more than 35 million POPs.[9] CellNet currently has operational networks in six metropolitan areas,[10] but has licenses to offer service in 58 of the top 60 MSAs.[11] In addition to serving utilities, the company provides remote monitoring for photocopying machines, vending machines, and home security systems.[12] It is planning to branch further into the non-energy telemetry markets as it grows.[13] Whisper Communications, Inc. ("Whisper") is a third provider of fixed wireless telemetry services to utility companies. In December 1997, Whisper was awarded a contract to connect 1.1 million electric and gas meters to wireless AMR networks.[14]

2. CMRS Providers

Certain CMRS providers have continued to branch into the fixed wireless telemetry market. The major players include SkyTel, PageMart, American Mobile, Metricom, and Aeris

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[4] *More Than Two Million Devices Now Online in CellNet Data Systems Wireless Networks,* PR NEWSWIRE, Feb. 16, 1999 ("*PR NEWSWIRE 2/16/99*"); *CellNet Data Systems Announces 1997 Fourth-Quarter and Year-End Results*, News Release, CellNet Data Systems, Inc., Feb. 9, 1998.

[5] *PR NEWSWIRE 2/16/99*.

[6] CellNet Data Systems, Inc., *Integrated Wireless* (visited Feb. 17, 1999) <http://www.cellnet.com/Home/welcome.html>.

[7] *Oburchay & Park*, at 1.

[8] *PR NEWSWIRE 2/16/99*.

[9] *Id.*

[10] Kansas City, St. Louis, Minneapolis-St. Paul, Seattle, Indianapolis, and the San Francisco Bay Area.

[11] *Oburchay & Park*, at 6.

[12] *PR NEWSWIRE 2/16/99*.

[13] *Oburchay & Park*, at 16.

[14] Whisper Communications, Inc., *About Whisper* (visited Feb. 19, 1999) <http://www.whisper.com/about.htm>.

Communications, Inc. ("Aeris").

SkyTel uses its narrowband PCS network to provide fixed wireless telemetry services.[15] SkyTel had 104,500 devices under contract at the end of 1998; however, only 6,700 of these units were in service at that time.[16] SkyTel secured a 6-year contract with Enron to supply at least 69,000 AMR units to an integrated natural gas and electric company for residential use.[17] SkyTel also has a contract to provide 20,000 fixed wireless telemetry units to Barringer Instruments, Skywire Corporation, the Williams Companies, and XP Systems.[18]

PageMart also uses its narrowband PCS licenses to offer fixed wireless telemetry services. It currently has contracts to provide telemetry services for environmental control systems,[19] photocopying and imaging systems,[20] and home security systems.[21] PageMart plans to have its telemetry networks fully operational by mid-1999.[22]

American Mobile acquired ARDIS in April 1998 and uses ARDIS's wireless data licenses to provide fixed, as well as mobile, telemetry services. For example, American Mobile provides AMR service to Enron's commercial and industrial customers.[23] Enron not only monitors electricity use by its customers using American Mobile's network, but also allows its corporate customers to monitor electricity use in their own regional offices from remote locations.[24]

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15 *Oburchay & Park*, at 23.

16 *SkyTel Earns Positive Net Income in 4Q98*, News Release, SkyTel Communications, Inc., Feb. 17, 1999.

17 *Id.*; *Mtel and Enron Energy Services Announce Major Service Agreement*, News Release, SkyTel Communications, Inc., Dec. 15, 1997; *Oburchay & Park*, at 23.

18 *Mtel Signs Contracts for 20,000 Fixed Wireless Units*, News Release, SkyTel Communications, Inc., Sep. 9, 1997.

19 *PageMart Wireless Announces Strategic Alliance with Pentech to Provide Telemetry Solutions for the Environmental Control Industry*, News Release, PageMart Wireless, Inc., Sep. 15, 1998.

20 *PageMart Wireless Reports Fourth Quarter Results; Narrowband PCS Network Launched Nationwide*, PR NEWSWIRE, Feb. 4, 1999.

21 *PageMart Wireless Forms Strategic Alliance with ITI to Provide Telemetry Solutions for Home Security Industry*, News Release, PageMart Wireless, Inc., Sep. 15, 1998.

22 Antony Bruno, *PageMart Starts Two-Way Service*, RCR RADIO COMMUNICATIONS REPORT, Dec. 21, 1998.

23 *Oburchay & Park*, at 23; Tony Kontzer, *Electricity Meter Reading Joins Digital Era*, INVESTOR'S BUSINESS DAILY, Jul. 6, 1998.

24 Tony Kontzer, *Electricity Meter Reading Joins Digital Era*, INVESTOR'S BUSINESS DAILY, Jul. 6, 1998.

American Mobile and Enron will bring at least 55,000 meters on-line by July 2001.[25]

Metricom, the producer of Richochet, uses spread-spectrum radios in the unlicensed 902-928 MHz band of radio spectrum to offer a fixed wireless telemetry service called UtiliNet to utility companies.[26]

Aeris offers a telemetry product with fixed and mobile capabilities called MicroBurst that uses the control channel infrastructure of cellular networks.[27] Aeris offers MicroBurst by partnering with cellular carriers, which in turn offer it to their end users (including Bell Atlantic, Ameritech, U.S. Cellular, and AirTouch).[28] These agreements give Aeris a footprint that covers 80 percent of the cellular licenses areas in the United States and 200 million POPs in North America.

Another company, Cellemetry LLC ("Cellemetry"), offers telemetry services using the underutilized portions of cellular telephone networks to send short data messages.[29] Forty cellular carriers offer Cellemetry in their license areas, including BellSouth, which owns 40 percent of Cellemetry.[30] With these agreements, Cellemetry covers 82 percent of the cellular license areas in the U.S., which cover 80 percent of the U.S. population, and has the highest number of deployed telemetry units connected to cellular networks.

In addition to Cellemetry, BellSouth offers telemetry services to systems that must transmit larger amounts of data, such as commercial alarm systems and vending machine monitoring systems, through BellSouth Wireless, previously RAM Mobile Data. This network covers 93 percent of the business population in the U.S. BellSouth plans to double the number of base stations it uses for its telemetry operations from May 1998 to May 2000.[31]

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[25] *Id.*

[26] Metricom, Inc., *Products and Services* (visited Feb. 22, 1999) <http://www.ricochet.net/products/corp.htm>; Metricom, Inc., *Welcome to UtiliNet* (visited Feb. 22, 1999) <http://www.metricom.com/products/industrial/utilinet.html>.

[27] *AirTouch to Offer Aeris MicroBurst for Short-Burst Data Applications; Aeris Nears Completion of National Footprint*, BUSINESS WIRE, Feb. 8, 1999.

[28] *Id.*

[29] Cellemetry LLC, *Technical Overview* (visited Feb. 22, 1999) <http://209.86.119.56/html/techoverview.html>.

[30] *Recent Agreements Give Company "Largest Cellular Data Services Network in World,"* News Release, Cellemetry LLC, Jan. 11, 1999.

[31] Nancy Gohring, *Telemetry Takes the Lead: Small-Volume Wireless Data May Be First to Make a Profit*, TELEPHONY, May 11, 1998.

B. Potential Growth

There is still great potential for the fixed wireless telemetry industry and many segments of the market remain untapped.[32] An analyst from the Yankee Group stated, "We believe that telemetry will grow significantly over the next five years, making a noticeable impact on the $200 billion deregulating energy industry and other industries. The value of telemetry, though virtually unrecognized today, is increasing as it becomes technologically feasible and cost-effective. Its possibilities are vast."[33]

Only two percent of the more than 270 million utility meters in the United States have been telemetrized.[34] The Strategis Group believes 37 percent of those will be connected to fixed wireless networks within the next five years, with the majority being electric or gas meters in hard-to-reach rural areas.[35] One analyst has stated that there is an "opportunity for 130 million [non-utility] remote monitoring sites nationwide" in addition to the millions of potential utility sites.[36] Another analyst has predicted that telemetry systems using Motorola's ReFLEX technology (a technology also used for narrowband PCS applications) will have 11 million units in service by the end of 2001 and 40 million by the end of 2005.[37] And CellNet itself admits that is has hardly scratched the surface of the market, stating that its two million deployed telemetry devices represent only one-half of one percent of the potential U.S. utility metering market.[38]

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[32] *Yankee Group Predicts Telemetry Growth*, PAGINGNOW, Jan. 8, 1999; CellNet Data Systems, Inc., *What the Media and Analysts Are Saying about CellNet* (visited Feb. 17, 1999) <http://www.cellnet.com/News/mediaMain.html>.

[33] *Yankee Group Predicts Telemetry Growth*, PAGINGNOW, Jan. 8, 1999.

[34] Whisper Communications, Inc., *About Whisper* (visited Feb. 20, 1999) <http://www.whisper.com/about.htm>.

[35] Nancy Gohring, *Telemetry Takes the Lead: Small-Volume Wireless Data May Be First to Make a Profit*, TELEPHONY, May 11, 1998.

[36] *Oburchay & Park*, at 1, 17.

[37] *DRC Projects Telemetry Applications for ReFLEX*, PAGINGNOW, Feb. 17, 1999 (quoting Brian Cotton, an industry business manager for wireless communications and telecommunications transmission practices for Frost & Sullivan).

[38] CellNet Data Systems, Inc., *Integrated Wireless* (visited Feb. 17, 1999) <http://www.cellnet.com/Home/welcome.html>.